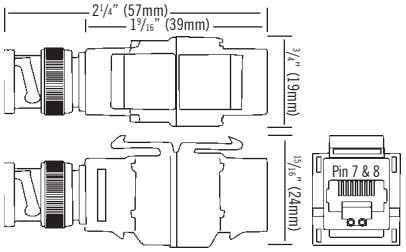
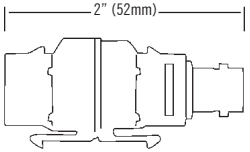
**FIG. 7:** Dimensions.

Male




Female




## Specifications:

| | |
|---|---|
| Video Format | RS170, NTSC, PAL, SECAM, CCIR |
| Maximum Input | 1vpp |
| Insertion Loss | < 2dB per pair from DC ~ 8 Mhz |
| Return Loss | >-15dB from DC ~ 8 Mhz |
| Frequency Response | DC ~ 8 Mhz |
| Attenuation | 6.6 dB/1000 ft. @ 1MHz |
| Common Mode Rejection | 40 dB @ 8 MHz |
| Impedance - Coax, Male BNC | 75 Ohms @ 1 MHz |
| Power | No power required |
| Surge Protection | Transient immunity: 6000V at 1.2 µs * 50 µs |
| Temperature Range | 32°~131°F (-0°~55°C) |
| Humidity Range | 0 ~ 95% |
| Wire Type | UTP (Unshielded Twisted Pair) |
| Wire Category | Category 2 or better. Best if > CAT 5e |
| UTP Connection | RJ-45. Pins 7 & 8 reverse polarity sensitive |
| Case | ABS Plastic |

***NOTE:** Shorter range may result when Baluns are used with DVR.

## TROUBLE SHOOTING

| Problem | Possible Cause | Possible Solution |
|---|---|---|
| Wavy or ghost image if connected to image processor (e.g., multiplexer or DVR), but not if directly to monitor? | a. Strong electromagnetic interference.<br>b. Poor signal, or balun separation is too long.<br>c. Split pairs.<br>d. Crimped cable. | a. Move the cable away from possible sources of interference.<br>b. Install video amplifier between image processor and balun.<br>c. Ensure same twisted pair connects to balun at both ends of cable.<br>d. Replace cable with new cable. |
| Image background flutters between dark and light? | Interference from external power source. | Remove power source, or adjust monitor's brightness and contrast. |
| Image is wavy and shakes? | Twisted pair wires reversed. | Try reversing polarity of the 2 wires at one end of cable. |
| Image is weak or faded? | a. Exceeded recommended balun separation.<br>b. Using lower-grade cable than recommended. | a. Reduce cable length.<br>b. Replace with a higher-grade cable. CAT 5e cable meets specifications in the manual. CAT 5e or better cable allows longer range. |
| No image? | a. Power is off.<br>b. Cable is incorrectly connected/crimped.<br>c. Cable was accidentally cut.<br>d. Wires running from pins 7 and 8 reversed.<br>e. Defective camera or remote video device.<br>f. Defective video balun. | a. Check the power supplies of all devices connected to the cable.<br>b. Double-check that the cable was connected and crimped properly.<br>c. Run a continuity test on all wires in the cable.<br>d. Reverse the wires.<br>e. Replace the unit with a new unit.<br>f. Replace the unit with a new unit. |
| Poor image quality when testing using cable on a reel? | Induction from the coiled cable. | Test only with cable laid out in such a way that it is not coiled and does not double back on itself. |

**LIMITED LIFETIME WARRANTY:** This ENFORCER Passive Video Balun is warranted against defects in material and workmanship while used in normal service for the life of the product from the date of sale to the original customer. Our obligation is limited to the repair or replacement of any defective part if the unit is returned, transportation pre-paid, to SECO-LARM.

**NOTICE:** The information and specifications printed in this manual are current at the time of publication. However, the SECO-LARM policy is one of continual development and improvement. For this reason, SECO-LARM reserves the right to change specifications without notice. SECO-LARM is also not responsible for misprints or typographical errors.
Copyright © 2005 SECO-LARM U.S.A., Inc. All rights reserved. This material may not be reproduced or copied, in whole or in part, without the written permission of SECO-LARM.

**SECO-LARM® U.S.A., Inc.,** 16842 Millikan Avenue, Irvine, CA 92606
Tel: 800-662-0800 / 949-261-2999 Fax: 949-261-7326 Website: www.seco-larm.com
E-mail: sales@seco-larm.com



# Installation Manual

# ENFORCER®

## EVT-PBM-V17

Male Gold-Plated BNC

## EVT-PBM-V27

Female Gold-Plated BNC

Modular Snap-In Passive Video Balun with surge protection.

Range: Up to 2,000' (610m)

### WHAT IT IS

The EVT-PBM-Vxx Passive Video Balun is the quick, low-cost way to connect CCTV cameras to a monitor, multiplexer, or video recorder at up to 2,000 feet away.

The EVT-PBM-Vxx allows a CCTV camera's video signal to be transmitted over low-cost CAT 5e unshielded twisted pair (UTP) cable instead of costly coax cable. It is suitable for full-motion color and monochrome cameras.

### INSTALLATION

**NOTE:** Video baluns are connected in pairs. One connects to the CCTV camera's BNC connector, and the other connects to the BNC connector of a remote video device. Exception: Passive 16-port video hubs like SECO-LARM's EVT-PH16-4T2 do not require a second balum.

1. Make sure the maximum distance between the CCTV camera and the remote video monitor, recorder, multiplexer, or other device to which it is connected does not exceed 2,000' (610m). See fig. 1.
2. Run the UTP cable from the remote video device to where it will be connected to the CCTV camera. Follow the CCTV camera's wiring instructions for information on how to safely run and hide this wire.

   NOTE: The end of the cable near the CCTV camera should terminate in an RJ-45 connector. The end near the remote video device may have an RJ-45 connector or bare wires, depending on how it is connected to the remote device.
3. On the CCTV camera side (fig. 2):
   a. Crimp an RJ-45 connector to the end of the cable (see fig. 3).
   b. Plug the cable's RJ-45 connector into an EVT-PBM-V17 or EVT-PBM-V27 modular balun.
   c. Push the balun through the hole in the modular single-gang wall plate. Mount the plate in the wall.
   d. Connect the video balun's BNC connector to the CCTV camera's video-out BNC connector. If the CCTV camera has a BNC connector coming out from the camera, use an optional coax cable from the camera to the balun.
4. On the remote video device side – How it is connected depends on the remote video device:
   a. For video devices such as a monitor, digital video recorder, multiplexer, or video switch, either:
      (1) terminate the cable with an RJ-45 connector and plug into an EVT-PBM-V17 or EVT-PBM-V27 modular balun, and then through an optional coax cable to the video device; or
      (2) plug the wires into a SECO-LARM EVT-PB1 passive video balun, and then plug the balun into the video device. See. figs. 4 and 5.
   b. For devices such as the EVT-PH16-4T2 16-port passive video hub, connect the cable's bare wires to the modular plug on the back of the hub. In this case, there is no need for a second passive video balun. See fig. 6.

   NOTE: Any bare wires exposed outside of the video baluns must be insulated and taped.

### Multiple cameras

Standard CAT 5e UTP cable includes four pairs of colored wires. Up to four CCTV cameras can be connected using EVT-PB1 video baluns per single run of CAT 5e UTP cable without interfering with each other under normal conditions. See fig. 4.

However, for installations where multiple cameras cannot be run over the same cable, separate cables must be run between the cameras and the remote devices. See fig. 6.

### Other cable types

The EVT-PBM-Vxx video baluns, when used with CAT 5e UTP cable, offer the performance characteristics mentioned in this manual. Other types of twisted cable can be used as well. However, the performance characteristics vary from cable to cable, and so care must be taken when using other types of cable. Specifically, the maximum distance between the camera and the remote device may decrease significantly with lower grades of cable.

### Crimping RJ-45 connectors to the UTP cable

The EVT-PBM-Vxx modular video balun's RJ-45 female connector has a standard 8-pin configuration. However, only pins 7 and 8 are active. Also, pins 7 and 8 are polarity-sensitive. When connecting the other end of the UTP cable to an EVT-PB1 or equivalent passive video balun, or to an EVT-PH16-4T2 or equivalent passive video hub, or when crimping it to an RJ-45 connector, note the polarity of the wires connected to pins 7 and 8. Accidentally reversing the polarity of those wires should not harm the video equipment, but it will block the video signal.

**Figure 1:**
Typical installation of a single video balun.

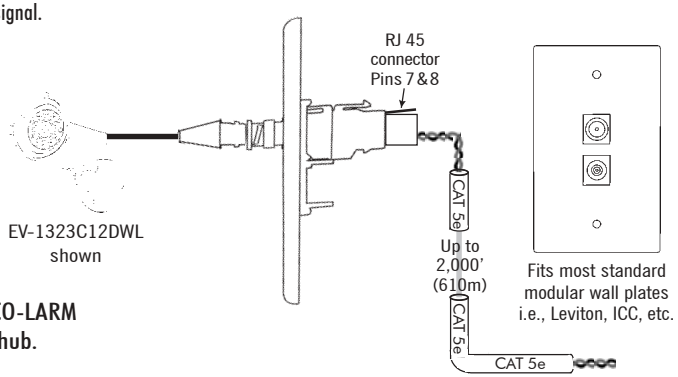



**Figure 2:**
Connecting a camera to the SECO-LARM EVT-PH16-4T2 16-port passive hub.

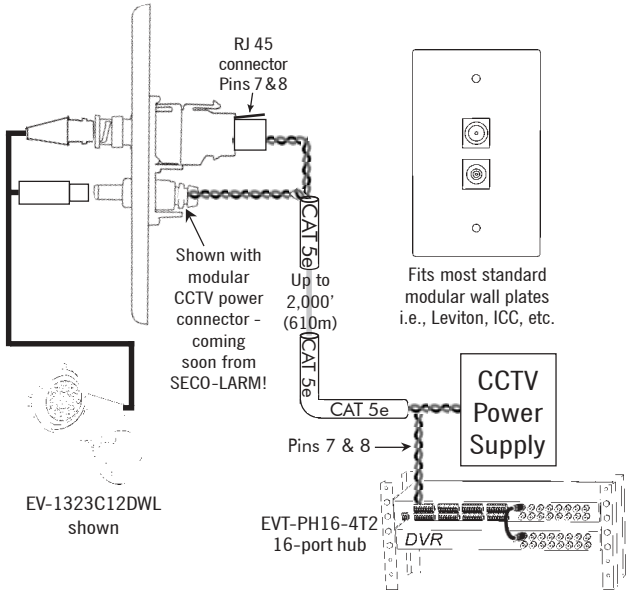



**Figure 3:**
RJ-45 pin configuration - Video output on pins 7 & 8

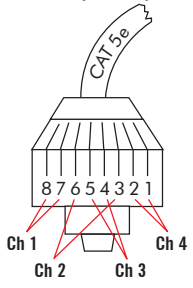







**Figure 4:**
Connecting multiple CCTV cameras to a remote device over CAT 5e cable.

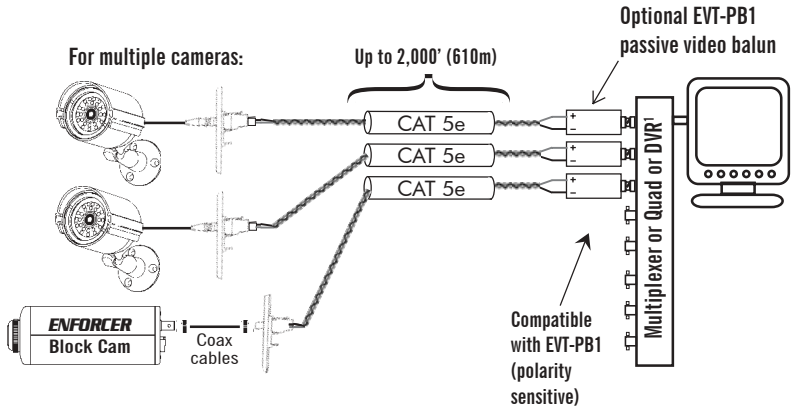



**Figure 5:**
Connecting the modular EVT-PBM-Vxx to the EVT-B1 passive video balun (polarity sensitive).

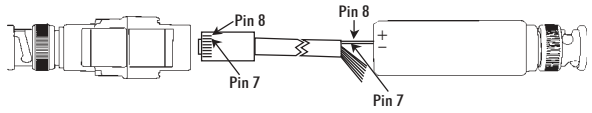
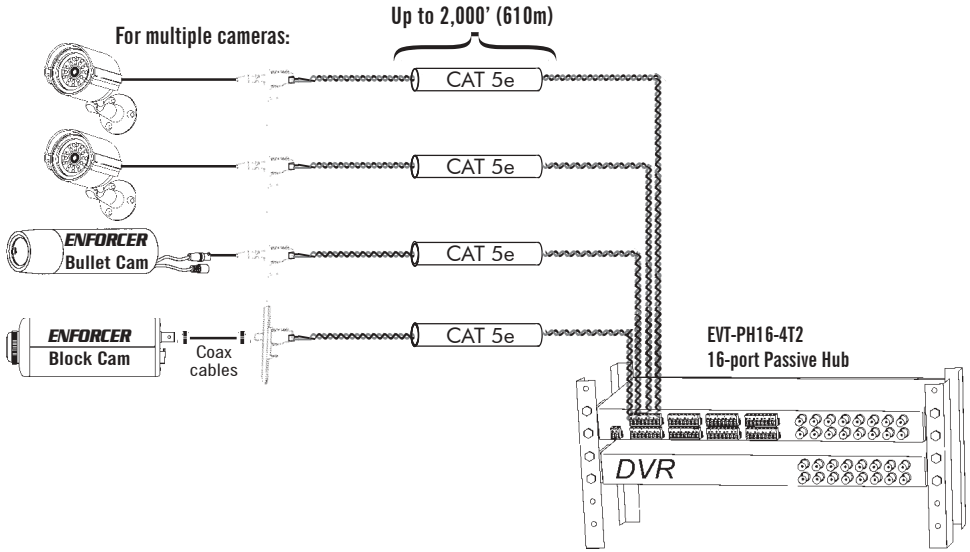



**Figure 6:**
Connecting multiple CCTV cameras to a centralized location over multiple CAT 5e cables.




¹**NOTE:** Shorter range may result when Baluns are used with DVR.